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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/758,848

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Prakash Parayil Mathew

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EXAMINER

SHAHRESTANI, NASIR

ART UNIT

PAPER NUMBER

3737

MAIL DATE

DELIVERY MODE

02/26/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/758,848	Applicant(s) MATHEW ET AL.	
	Examiner NASIR SHAHRESTANI	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to Applicant's communication filed 02/07/2008.

Claims 12 & 22 have been cancelled.

Claims 1-11, 13-21 are pending.

Response to Arguments

Applicant's arguments with respect to claims 1-11, 13-21 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6-11, 13-16, are rejected under 35 U.S.C. 103(a) as being unpatentable over Philips (U.S. 6,213,947) in view of Golland et al. (U.S. 2004/0006271 A1) and in further view of Bertora (U.S. 2005/0004459 A1).

Philips teaches a method for improved ultrasound imaging comprising: Encoding an ultrasound signal with a code to produce an encoded ultrasound vector (fig. 1 - 20A); transmitting from a first location said encoded ultrasound vector at desired angles (fig. 12); receiving at a second location an encoded echo signal produced in response to said encoded

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ultrasound vector; and decoding said encoded echo signal using said code used to produce said encoded ultrasound vector (fig.1 – 22a, 22m, 24a, 24m); and obtaining an image of an object based on encoded ultrasound signals (column 9 lines 10-16). Philips further teaches wherein said transmitter comprises a transducer array (fig. 11), and distinct codes for each ultrasound signal within a frame (abstract). Philips further teach the transducer (element 12) being coupled to transmit and receive switches (element 12) in order to regulate the arrangement of transmit vs. receive transducers, and providing within the broadest reasonable interpretation, at least one transducer being independent.

Philips does not teach receiving at a second location and encoded signal produced in response to said encoded ultrasound vector without receive beamforming said encoding signal.

In the same field of endeavor, Golland et al. teach methods and systems for construction of ultrasound images (title), providing methods and systems for generating ultrasound images in real-time without utilizing beamforming either in transmission of ultrasound wave into a region of interest or in processing echoes received from scatterers present in the region in response to the transmitted waves (par. 0045).

It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the apparatus and method as taught by Philips and to have incorporated the teachings of Golland et al. in order to eliminate the need for excess components such as a beamformer and to rely solely on the utilization of encoded echo signals when forming an image.

Philips in view of Golland et al. teach all the above mentioned limitations, including switching the function of transducers (i.e. transmit to receive) but do not specifically teach

wherein said second location comprises a single element transducer, separate from and independent of said transmitting transducer array, dedicated to said echo signals.

Bertora teaches an ultrasonic imaging method and apparatus wherein two separate and distinct groups of transducers are shown (fig. 7), one of which dedicated to transmission, and the other for reception of echo signals. Furthermore, Bertora clearly teaches that the receiving transducers may be composed of a single receiving transducer (See claim 11).

It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the apparatus and method as taught by Phillips in view of Golland et al. and to have incorporated the teachings of Bertora and to have provided for separate distinct transducers in order to eliminate the need for switching the functionality of one array of transducers.

Claims 2-5 & 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Philips (U.S. 6,213,947) in view of Golland et al. (U.S. 2004/0006271 A1) in further view of Bertora (U.S. 2005/0004459 A1) and in further view of Stein (U.S. 2002/0100326)

Regarding claims 2-5, Philips in view of Golland et al. in view of Bertora teach all the limitations of claim 1 but do not teach determining a position of a structure producing an encoded echo in response to impact based on a time of transmission or based on an angle of transmission. Stein teaches a method for determining a position using a device (element 310) for determining a location of a transducer/echo producing structure based on time of transmission and angle of transmission (par. [0069]).

It would have been obvious to one of ordinary skill at the time of the invention to have modified the method as taught by Philips in view of Golland et al. in view of Bertora, and to

have further included the steps of determining a position of an echo producing structure such as a transducer as taught by Stein in order to provide for measuring ultrasonic properties of an object in a manner which is independent of travel time measurements within the object (see Stein par. [0032]).

Regarding Claims 17-21, Philips in view of Golland et al. in view of Bertora teach all the limitations of claim 10 but do not teach a processor for determining position of a scatterer based on a time of transmission or angle of transmission. Stein teaches a processor (computer 50) that is used in conjunction with a timer (timer 48) and a scatterer (transducer 44) that emits echoes at various angles and is capable of determining a position of said scatterer (par. [0069]).

It would have been obvious to one of ordinary skill at the time of the invention to have modified the method as taught by Philips in view of Golland et al. in view of Bertora, and to have further included the steps of determining a position of an echo producing structure such as a transducer as taught by Stein using a processor in order to provide for minimal human intervention and to provide for measuring ultrasonic properties of an object in a manner which is independent of travel time measurements within the object (see Stein par. [0032]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NASIR SHAHRESTANI whose telephone number is (571)270-1031. The examiner can normally be reached on Mon.-Thurs: 7:30-5:00, 2nd Friday: 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. S./
Examiner, Art Unit 3737

/Brian L Casler/
Supervisory Patent Examiner, Art Unit 3737